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10/532,797

12/22/2005

Giulio Lo Presti

33033-1030

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7590

11/08/2007

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EXAMINER

HAYES, KRISTEN C

ART UNIT

PAPER NUMBER

3643

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/532,797

Applicant(s)

LO PRESTI ET AL.

Examiner

Kristen C. Hayes

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>20050425</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 25 April 2005 is being considered by the examiner.

Specification

2. The disclosure is objected to because of the following informalities: intake line 25. (pg 6: lines 4-5). Reference character 25 is previously disclosed as hydraulic circuit.
3. The disclosure is objected to because of the following informalities: recirculation duct 53. (page 10, line 13). Reference character 53 is previously disclosed as exchange surface.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

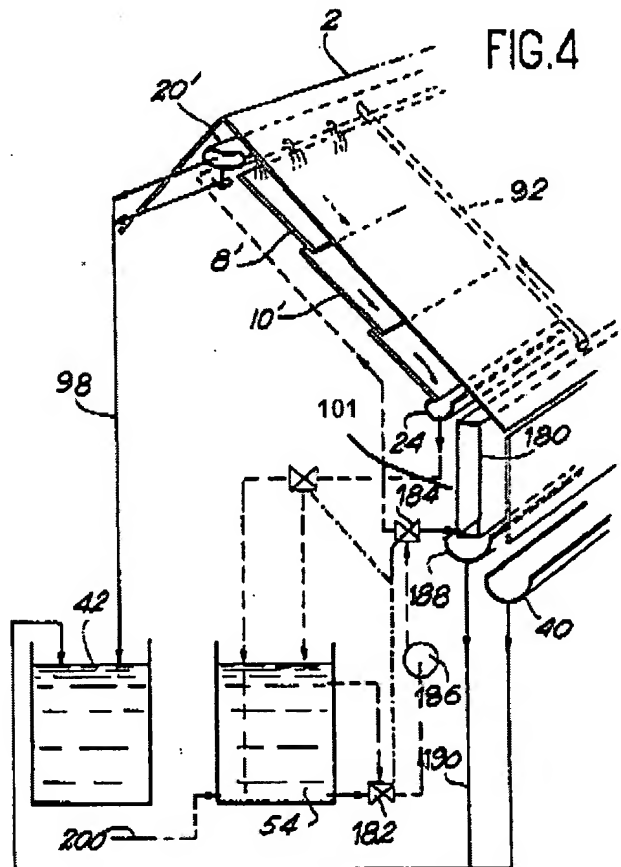
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims 7 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
6. Claims 7 and 11 recite the limitation "the humidified air" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-3, 5, 7, 10-13, 15-20, 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Balligand EP 0005103 in view of Mori EP 1203525.



Modified Figure 4, EP 0005103

9. Regarding claim 1, Balligand discloses a greenhouse comprising a structure (2) delimiting a growing environment (12), and an air humidifier (8,10)(abstract), the

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greenhouse being characterized in that the said humidifier comprises at least one exchange element (heated panels exchange heat with water) having a semi-permeable membrane (10)(abstract) having opposite sides, and in that the greenhouse also comprises first supply means (200) for bringing a flow of water into contact with the humidifier. Ballingand does not disclose the semi-permeable membrane that allows water vapor to pass between opposite sides if there is a vapor pressure gradient between the said sides. However, Mori teaches a semi-permeable membrane that allows water vapor to pass between opposite sides if there is a vapor pressure gradient between the said sides (Mori, pg 5: lines 27-30). The semi-permeable membranes ensure that only water under a certain pressure will pass through the membrane and that impurities of the water will not be allowed to pass. A second supply means is not disclosed. However, it is well known in the art to provide a humidifier with an air supply means such as a vent that allows air to mix with vaporized water, thus humidifying the air. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Balligand with an air supply means to the humidifier and the pressure gradient vapor semi-permeable membrane of Mori to provide air the be humidified and to filter the water.

10. Regarding claim 2, Ballingand discloses a device with the limitations of claim 1 further characterized by the first supply means comprises a hydraulic circuit (182, 186, 184) for bringing the flow of water into contact with a first side of the membrane.

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11. Regarding claim 3, Balligand discloses a device with the limitations of claim 1 further characterized in that the flow of water is seawater (Balligand translation, pg 2: ¶2: line 3).

12. Regarding claim 7, Balligand discloses a device with the limitations of claim 1 further characterized in that it comprises a condenser (180) *for condensing the water vapor present in humidified air introduced into the greenhouse and for obtaining condensate*. The italicized words are considered functional language. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

13. Regarding claims 10 and 23, Balligand discloses a method with the limitations of claims 7 and 18, respectively. Balligand does not disclose a recirculation step in which the air leaving the condenser is collected and supplied to the humidifier. However, it would have been obvious to do so. If the air leaving the condenser was supplied to the humidifier no additional or external source of air would be required for the operation of the device. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Balligand by recirculating the air leaving the condenser to the humidifier so that no additional or external source of air would be required for the operation of the device. Given the structure, the method of cultivation under glass is inherently performed.

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14. Regarding claim 11, Balligand discloses a device with the limitations of claim 7 further characterized in that the condenser comprises at least one heat exchange element (101) between the humidified air taken from the greenhouse and a cooling fluid (from 20')(Balligand translation, pg 5: line 6) having a temperature lower than the temperature of the humidified air within the greenhouse.

15. Regarding claim 12, Balligand discloses a device with the limitations of claim 11 further characterized in that in that it comprises a branch circuit (182, 186, 184) for taking the cooling fluid from the flow of water up-line from the humidifier.

16. Regarding claim 13, Balligand discloses a greenhouse with an air humidifier (8,10)(abstract) comprising an exchange element (heated panels exchange heat with water) having a semi-permeable membrane, with a flow of water (200) in contact with a side of the membrane. Balligand does not disclose the semi-permeable membrane that allows water vapor to pass between opposite sides if there is a vapor pressure gradient between the said sides. However, Mori teaches a semi-permeable membrane that allows water vapor to pass between opposite sides if there is a vapor pressure gradient between the said sides (Mori, pg 5: lines 27-30). The semi-permeable membranes ensure that only water under a certain pressure will pass through the membrane and that impurities of the water will not be allowed to pass. A second supply means is not disclosed. However, it is well known in the art to provide a humidifier with an air supply means such as a vent that allows air to mix with vaporized water, thus humidifying the air. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Balligand with an air supply means to the

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humidifier and the pressure gradient vapor semi-permeable membrane of Mori to provide air the be humidified and to filter the water. Given the structure, the method of cultivation under glass is inherently performed.

17. Regarding claim 15, Balligand discloses a method with the limitations of claim 13 but does not disclose the air supplied to the humidifier having a vapor pressure lower than the vapor pressure of the flow of water. However, it would have been obvious to do so. If the air supplied to the humidifier had a vapor pressure higher than the vapor pressure of the flow of water it would pass through the membrane. Since the air is needed to mix with the vaporized water to obtain humidified air, it would undesirable for the air to pass through the humidifier without being humidified. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide air to the humidifier having a vapor pressure lower than the vapor pressure of the flow of water to ensure that the flows of air and water mixed. Given the structure, the method of cultivation under glass is inherently performed.

18. Regarding claim 16, Balligand discloses a method with the limitations of claim 13 but does not disclose the flow of water supplied to the humidifier being at a temperature lower than the temperature of the of the flow of air. However, it would have been obvious to do so. The warmer air is the more water it holds. If the air supplied was warmer than the water supplied then the air would take and hold water more easily than if the water supplied was warmer than the air supplied. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the

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humidifier of Balligand with a flow of air at a higher temperature than the flow of water.

Given the structure, the method of cultivation under glass is inherently performed.

19. Regarding claim 17, Balligand discloses a method with the limitations of claim 13 characterized in that the flow of water is seawater (Balligand translation, pg 2: ¶ 2: line 3). Given the structure, the method of cultivation under glass is inherently performed.

20. Regarding claim 18, Balligand discloses a method with the limitations of claim 13 further characterized by the water vapor present in the humidified air introduced into the greenhouse is condensed in a condenser to produce condensate (Balligand translation, pg 5: ¶2, lines 6-7). Given the structure, the method of cultivation under glass is inherently performed.

21. Regarding claim 19, Balligand discloses a method with the limitations of claim 18 further discloses humidified air in the greenhouse (Balligand, abstract) Balligand does not disclose heat exchange between the humidified air taken in that the condensation is obtained by heat exchange between the humidified air taken from the greenhouse and a cooling fluid having a temperature lower than the temperature of the humidified air. However, the examiner takes official notice that condensers of this type are well known to exchange heat between a fluid of a higher temperature and a fluid of a lower temperature. Heat is given off from the fluid of the higher temperature, which cools a heat exchange member. Humidified air comes into contact with the heat exchange member and condenses. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the condenser of Balligand with a cooling fluid to cool an exchange member, causing the humidified air to condense upon

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contact. Given the structure, the method of cultivation under glass is inherently performed.

22. Regarding claim 20, Balligand discloses a method with the limitations of to claim 19 further characterized by the cooling fluid being taken from the flow of water up-line from the humidifier (182, 186, 184). Given the structure, the method of cultivation under glass is inherently performed.

23. Regarding claim 24, Balligand discloses a method with the limitations claim 18, but does not disclose the air leaving the condenser being sent to cool a roof of the greenhouse. However, it would have been obvious to do so. The air leaving the condenser would be cool. Distributing this air over the roof would help maintain a constant temperature within the greenhouse, making conditions within the greenhouse more predictable. Also, as the air cooled the roof of the greenhouse it would become warm. If desired, this warm air could then be supplied to the humidifier. Warm air holds water vapor better than cooler air. So, the warm air of the condenser could easily be used in the humidifier to produce humidified air. No external source to heat the air would be needed. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Balligand so that air leaving the condenser cooled the roof of the greenhouse, making the conditions within greenhouse more predictable. Given the structure, the method of cultivation under glass is inherently performed.

24. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Balligand EP 0005103 in view of Sprung US 4,956,936.

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25. Regarding claim 9, Balligand discloses a device with the limitations of claim 7 but does not disclose the condenser being connected to irrigation means for distributing the condensate to the plants placed in the greenhouse. However, Sprung teaches an disclose the condenser being connected to irrigation means for distributing the condensate to the plants placed in the greenhouse distributing the condensate (-36-) to the plants placed in the greenhouse (Sprung, column 7: lines 1-12). The condensate produced by the condenser would be fresh, purified water. Using this water to irrigate the plants within the greenhouse would simplify the device so that an additional or external means of fresh water was not required. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the condenser of Balligand with the irrigation system of Sprung to distribute the condensate to the plants so that an additional or external means of fresh water wouldn't be required.

26. Claims 4, 8, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Balligand EP 0005103 in view of Landstrom et al US Patent 4,567,732.

27. Regarding claim 4, Balligand discloses a device with the limitations of claim 1 but does not disclose a forced ventilation means. However, Landstrom teaches a supply means comprising forced ventilation (35, 37) means for bringing the flow of air into contact with a second side of the membrane and introducing the humidified air leaving the humidifier (38) into the greenhouse. The forced ventilation means would ensure that air was contacting the second side of the membrane, where it would then be humidified and enter the greenhouse. It could also be used to vary the pressure of the air.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the

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invention to modify the device of Balligand with the forced ventilation means of Landstrom to ensure that air was contacting the second side of the membrane, as well as vary the pressure of the air.

28. Regarding claims 8 and 14, Balligand discloses a device with the limitations of claim 7 but does not disclose a condenser and humidifier being positioned at opposite ends of the greenhouse. However, Landstrom teaches the condenser (31) and the humidifier (38) being positioned at opposite ends of the greenhouse with forced ventilation means (44, 30, 35, 37, 47) provided to keep the air in force circulation between the ends of the greenhouse. The condenser and the humidifier being at opposite ends of the greenhouse would ensure that the operation of the condenser did not interfere with the operation of the humidifier. The forced ventilation would bring the air from the condenser in contact with the humidifier. No additional or external source of air would be needed to operate the humidifier. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the positioning of the humidifier and condenser of Balligand with the positioning of Landstrom as well as include forced ventilation means so that the operation of the condenser and humidifier would not interfere with each other and also to bring the air from the condenser in contact with the humidifier. Given the structure, the method of cultivation under glass is inherently performed.

29. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Balligand EP 0005103 in view of Chmiel US Patent 5,089,122.

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30. Regarding claims 5 and 6, Balligand discloses a device with the limitations of claim 1 including a humidifier with a heat exchange element and a flow of liquid and air in contact with the exchange element, but does not disclose a plurality of heat exchange elements being delimited by a portion of semi-permeable membrane. However, Chmiel teaches a plurality of exchange elements (Figures: 1, 4) each exchange element being delimited by a portion of semi-permeable membrane (1, 1') interposed between the said flow of water (Chmiel, column 5: lines 54-55), circulating within the exchange element, and that the semi-permeable membrane is shaped in such a way as to form a plurality of compartments (2) constituting corresponding exchange elements, the compartments having the said flow of water running within them (Chmiel, column 5: lines 54-55). These types of structures are well known in the art to filter substances. The fluid circulates through the exchange elements, and the water permeates through the membrane leaving behind its impurities. Also, the heat exchange elements being delimited by the semi-permeable membrane would eliminate the need for additional parts such as pipes or filters. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Balligand with the heat exchange elements delimited by a semi-permeable membrane of Chmiel to provide a filter for the fluid, as known in the art, as well as to eliminate the need for additional parts or filters.

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Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kristen C. Hayes whose telephone number is 571-270-3093. The examiner can normally be reached on Monday-Thursday, 7:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Poon can be reached on (571)272-6891. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KCH
25 October 2007

Peter Poon.
Supervisory Patent Examiner
Art Unit 3643


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